

US006369116B1

(12) United States Patent Wong et al.

(10) Patent No.:

US 6,369,116 B1

(45) Date of Patent:

Apr. 9, 2002

(54) COMPOSITION AND METHOD FOR TREATING GLAUCOMA

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- (*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.
- (21) Appl. No.: 09/221,002
- (22) Filed: Dec. 23, 1998

Related U.S. Application Data

- (63) Continuation of application No. 09/160,635, filed on Sep. 24, 1998, which is a continuation of application No. 08/459, 134, filed on Jun. 2, 1995, now Pat. No. 5,869,079.

(56) References Cited

U.S. PATENT DOCUMENTS

4,478,818 A		10/1984	Shell et al 424/14
4,863,457 A	•	9/1989	Lee
4,865,846 A	٠	9/1989	Kaufman
4,997,652 A		3/1991	Wong 424/428
5,075,115 A		12/1991	Brine 424/486
5,164,188 A		11/1992	Wong 424/428
5,268,178 A	٠	12/1993	Calhoun et al.
5,356,629 A		10/1994	Sander et al 424/422
5,385,887 A		1/1995	Yim et al 514/12
5,501,856 A		3/1996	Ohtori et al 424/428
5,656,297 A	•	8/1997	Bernstein et al.
5,707,643 A	*	1/1998	Ogura

OTHER PUBLICATIONS

R. Baker, "Controlled Release of Biologically Active Agents," A Wiley-Interscience Publication, p. 73 (1987). G. DiColo, "Controlled drug release from implantable matrices based on hydrophobic polymers," Biomaterials 1992, vol. 13, No. 12:850-853.

T. Jackanicz et al, "Polylactic Acid As A Biodegradable Carrier For Contraceptive Steroids," *Contraception*, vol. 8, No. 3:227-235.

R. Miller et al, "Degradation Rates of Oral Resorbable Implants (Polylactates and Polyglycolates): Rate Modification with Changes in PLA/PGA Copolymer Ratios," J. Biomed. Mater. Res., vol. 11:711-719 (1977).

J. Heller, "Biodegradable Polymers in Controlled Drug Delivery," CRC Critical Reviews in Therapeutic Drug Carrier Systems, vol. 1, Issue 1:39-90.

J. Charles, et al, "Use of Biocrodible Polymers Impregnated with Mitomycin in Glaucoma Filtration Surgery in Rabbits," *Ophthalmology*, Apr. 1991, vol. 98, No. 4: 503-508.

H. Jampel, et al, "Glaucoma Filtration Surgery in Monkeys Using 5-Fluorouridine in Polyanhydride Disks," Arch Ophthalmol, Mar. 1990, vol. 108:430-435.

D. Lee, et al, "The Use of Bioerodible Polymers and 5-Fluorouracil in Glaucoma Filtration Surgery," *Investigative Ophthalmology & Visual Science*, Nov. 1988, vol. 29, No. 11:1692–1697.

M. Chang, et al, "Basic Science and Clinical Aspects of Wound Healing in Glaucoma Filtering Surgery," *Journal of Ocular Pharmacology and Therapeutics*, 1998, vol. 14, No. 1:75–95.

D. Lee, et al, "Glaucoma Filtration Surgery in Rabbits Using Bioerodible Polymers and 5-Fluorouracil," Ophthalomology, Dec. 1987, vol. 94, No. 12:1523-1530.

T. Smith, et al, "Sustained-release subconjunctival 5-Fluorouracil," *Ophthalmic Surgery Lasers*, Sep. 1996, vol. 27, No. 9:763-767.

* cited by examiner

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57) ABSTRACT

Implants and methods are provided for modulating wound healing and controlling infection to improve the success of glaucoma filtration surgery. Formulations of one or more therapeutically active agents and a biodegradable polymer provide a substantially constant rate of release for an extended period of time.

19 Claims, 5 Drawing Sheets



